CLAIMS

What is claimed is:

1. A recombinant and/or substantially isolated or purified mammalian mucinase, or a modified form thereof having a substantially similar mucin-hydrolyzing activity.

2. A recombinant and/or substantially isolated or purified mucinase, said mucinase being a mucinase having an amino acid sequence essentially corresponding to the amino acid sequence shown in FIG. 8, or a modified form of said mucinase having a substantially similar mucin hydrolyzing activity.

3. The mucinase of claim 1 or claim 2, produced by a host or host cell and isolated from said host, host cell or medium in which said host cell is cultured.

4. The mucinase of claim 3, wherein the amino acid sequence of said mucinase is encoded by a nucleotide sequence essentially corresponding to the nucleotide sequence shown in FIG. 8.

5. A pharmaceutical composition comprising an effective amount of the mucinase of any one of the claims 1 to 4 and a pharmaceutically acceptable carrier or diluent.

6. A pharmaceutical composition for treatment or prophylaxis of a subject against a disease in which mucus is involved, said pharmaceutical composition comprising:

a therapeutically or prophylactically effective amount of the mucinase of any one of the claims 1 to 4, and

a pharmaceutically acceptable carrier or diluent.

7. The pharmaceutical composition of claim 6, which further comprises a therapeutically or prophylactically effective amount of a second pharmaceutical composition, such as human DNAse1, a mucolytic, an antibiotic, a pancreatic enzyme supplement, an antifungal drug, an antihistamine, a bronchodilator, a leukotrien inhibitor, and/or a corticosteroid.

8. A composition comprising the mucinase of any one of the claims 1 to 4 and a carrier or diluent.

9. The composition of claim 8, which is a cosmetic, dental or food product.

10. A method of therapeutic or prophylactic treatment of a subject against a disease in which mucus is involved, said method comprising administering to the subject the pharmaceutical composition of claim 5, claim 6, or claim 7.

11. A method for preparing a mammalian mucinase, or a modified form thereof having a substantially similar mucin-hydrolyzing activity, said method comprising:

growing a host or host cell capable of producing said mucinase or modified form thereof and

isolating the mucinase produced from said host or host cell or from medium in which said host cell is cultured.

12. The method according to claim 11, wherein said mucinase comprises an amino acid sequence essentially corresponding to the amino acid sequence shown in FIG. 8, or a modified form of said mucinase having a substantially similar mucine-hydrolyzing activity.

13. The method according to claim 11 or 12, wherein said host or host cell comprises a genetically engineered host or host cell.

14. The method according to any one of the claims 11 to 13, wherein the amino acid sequence of said mucinase is encoded by a nucleotide sequence essentially corresponding to the nucleotide sequence shown in FIG. 8.

15. The mucinase of any one of the claims 1 to 4, further comprising a chitin-hydrolyzing activity.

16. A pharmaceutical composition for therapeutic or prophylactic treatment of a subject against infection by a chitin-containing pathogen, said pharmaceutical composition comprising:

a therapeutically or prophylactically effective amount of the mucinase of claim 15 and

a pharmaceutically acceptable carrier or diluent.

17. A fusion protein comprising:

the mucinase of any one of the claims 1 to 4 or 15 and/or a functional part thereof, and

a protection moiety.

18. A composition comprising the mucinase of any one of claims 1 to 4 or 15 and a carrier or diluent.

19. The composition of claim 18, which is a medium for culturing cells.

20. The composition of claim 18, which is a medium for culturing human cells.

21. The composition of claim 18, which is a cosmetic, dental, or food product.

22. A method of therapeutic or prophylactic treatment of a subject against infection by a chitin-containing pathogen, said method comprising:

administering to the subject the pharmaceutical composition of claim 16.

23. A chitin-based article of manufacture comprising:

a chitin-hydrolyzing amount of the mucinase of claim 15.

24. The chitin-based article of manufacture of claim 23, wherein said article of manufacture is a drug-containing drug carrier or implant for controlled drug release.

25. The chitin-based article of manufacture of claim 23, wherein said article of manufacture is a transient functional implant.

26. An isolated host cell capable of producing a mammalian mucinase.

27. The isolated host cell of claim 26 wherein said host cell is capable of producing a mucinase having an amino acid sequence essentially corresponding to the amino acid sequence shown in FIG. 8, or a modified form of said mucinase having a substantially similar mucine-hydrolyzing activity.

28. The host cell of claim 26 or claim 27, wherein said host cell is genetically engineered to produce an altered amount of mammalian mucinase.

29. A recombinant nucleic acid comprising a nucleotide sequence encoding, or complementary to a nucleotide sequence encoding, an expressable mammalian mucinase.

30. The recombinant nucleic acid of claim 29, wherein said mucinase comprises an amino acid sequence essentially corresponding to the amino acid sequence shown in FIG. 8.

31. The recombinant nucleic acid of claim 29 or claim 30, wherein said nucleotide sequence essentially corresponds to, or essentially is complementary to, the nucleic acid sequence shown in FIG. 8.

32. An oligonucleotide of at least about 8 nucleotides having a nucleotide sequence corresponding to, or complementary to, a nucleotide sequence shown in FIG. 8 and being capable of binding by hybridization under stringent hybridization conditions to nucleic acid coding for the mucinase of any one of the claims 1 to 4 or 15.

33. A peptide of at least about 8 amino acid residues having an amino acid sequence derived from the amino acid sequence shown in FIG. 8 and representing or mimicking an epitope of the mucinase of any one of the claims 1 to 4 or 15.

34. The peptide of claim 33 having an amino acid sequence corresponding to an amino acid sequence shown in figure 8 and having antigenicity.

35. An antibody capable of binding to the mucinase of any one of the claims 1 to 4 or 15.

36. The antibody of claim 35, wherein said antibody is a monoclonal antibody.

37. A diagnostic kit of the type having an antibody together with a component for detecting an antigen or an antibody, wherein the improvement comprises:

selecting the antibody to be the antibody of claim 35 or claim 36.

38. A diagnostic kit of the type having a peptide together with a component for detecting an antigen or an antibody, wherein the improvement comprises:

selecting the peptide to be the peptide of claim 33 or claim 34.

39. A diagnostic kit of the type having an oligonucleotide together with a component for detecting a nucleic acid, wherein the improvement comprises:

selecting the oligonucleotide to be the oligonucleotide of claim 32.

40. A diagnostic kit comprising the recombinant nucleic acid of any one of claims 29 to 31 and a conventional component of diagnostic kits for detecting a nucleic acid.

41. A diagnostic kit comprising a diagnostically effective amount of the mucinase of any one of the claims 1 to 4 or 15 and a conventional component of diagnostic kits for detecting an antigen or antibody.

42. A method of decomposing mucin, said method comprising:

contacting said mucin with the mucinase of any one of the claims 1 to 4 or 15 under mucin hydrolyzing conditions.

43. A method of decomposing chitin comprising contacting said chitin with the mucinase of claim 15 under chitin-hydrolyzing conditions.

44. The method of claim 10 wherein said disease is selected from the group consisting of cystic fibrosis, chronic obstructive pulmonary disease, asthma, bronchitis, tuberculosis, a mucin producing tumor, and infection by a protozoan parasite.